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The Examination of Milk Samples for Mastitis

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Since the introduction of the survey scheme for the control of the major diseases of dairy cattle there has been a considerable increase in the number of milk samples submitted for examination for evidence of mastitis. The writers have felt a need for the improvement of the methods at present employed for this purpose, having in mind the necessity for speed and accuracy in diagnosis and the idea that, where possible, the veterinary practitioner might himself undertake the examination of udder secretions in a limited number of cases.

Using cultural methods as at present generally employed, some delay may be occasioned before a report reaches the practitioner. At the same time only limited information is offered *as to the state of mastitis* in the herd. It has been our twofold object, therefore, to try to reduce this period to a minimum, while maintaining as high a degree of accuracy as possible and to offer to the practitioner more complete information concerning the samples examined.

With this object in mind we have compared the results obtained by the microscopical examination of smears made from incubated milk samples, as recommended by Van Rensburgh (1941)[1] with direct cultural examination using thallium acetate glucose broth medium (T.A.G.B.) (McKenzie, 1941).[2] In cases of doubt other diagnostic methods have been employed.*

MATERIAL

The material examined and now reported upon falls naturally into two main classes :

(*a*) The large majority have been routine samples taken to establish the presence (or absence of) and the predominating type of infection in a dairy herd. They thus showed little or no physical alteration. Most samples of this type have been sent in by practitioners but a few have been received from farmers direct following on the instructions of their veterinary practitioners.

(*b*) A smaller number have consisted of samples from cases of acute mastitis, clinical change in the udder and/or marked changes in the milk. The majority of these cases showed marked physical changes. An equal number of such samples have been received from practitioners and farmers.

The majority of samples have been received in sterile bottles issued to practitioners. There is no knowledge as to how the samples were taken or whether the samples consisted of foremilk, mid-milk or strippings, all of which it is acknowledged constitute factors of first-rate importance in the diagnosis of mastitis.

THE EXAMINATION OF UNCHANGED SAMPLES

Technique.—Upon receipt in the laboratory samples were allowed to stand on the bench until the cream rose. A triple loopful (0·01 c.c.) of the gravity cream was sown into T.A.G.B. and incubated at 37° C. for 48 hours, if necessary 72 hours. Smears of any flocculent deposits appearing at any period of incubation were stained with methylene blue and examined microscopically for *Str. agalactiae*. Where such examination left any element of doubt the deposit in T.A.G.B. was used either for the purpose of a precipitin test or as seed material for inoculating into carbohydrate media or crystal violet blood agar. At 4 p.m. on the day of receipt all samples were placed in the incubator and taken out at 10 a.m. the following morning, that is, after 18 hours' incubation at 37° C. The samples were then well shaken and a triple loopful (0·01 c.c.) of whole milk smeared thinly on a clean slide, three smears on each slide. (The four quarter samples can be examined with advantage on one slide, as recommended by Van Rensburgh.) Smears were then allowed to dry in air, after which they were immersed for 5 minutes in Newman's stain, made according to formula 1 or 2 as follows :—

Formula No. 1

Methylene blue powder	2 gms.
95 per cent. ethyl alcohol	60 c.c.
Xylene	40 c.c.
Glacial acetic acid	6 c.c.

Formula No. 2

Methylene blue powder	1·2 gms.
95 per cent. ethyl alcohol	54 c.c.
Tetrachlorethane	40 c.c.
Glacial acetic acid	6 c.c.

The methylene blue powder should be thoroughly dissolved in the ethyl alcohol before adding the other ingredients. These preparations extract fat, fix and stain.

Smears were then removed and allowed to dry in air again before being gently washed in tap water to remove excess stain. They were finally dried once more in air before being examined under the 1/12th oil immersion lens.

Results.—The results are set out in the accompanying tables.

TABLE I

No. of samples examined	No. containing *Str. agalactiae*	No. negative
1,078	369 (34·2 %)	709 (65·8 %)

In the 1,078 samples examined *Str. agalactiae* was found present by one or both methods in 369 (34·2 per cent.) and absent in 709 (65·8 per cent.). A closer examination of the 369 positive samples, Table II, indicates that complete agreement was obtained between the two methods of examination in 257 (69·6 per cent.) cases, and a doubtful diagnosis by smear confirmed positive on culture in 24 cases (6·5 per cent.). Complete disagreement was obtained in a total of 88 (23·9 per cent.) cases. Microscopically, 39 (10·5 per cent.) samples proved positive whilst being negative culturally, whereas 49 (13·4 per cent.) cases positive culturally were negative microscopically. It was thus possible to detect *Str. agalactiae* infection microscopically with certainty in 296 (80 per cent.) cases and in a total of 320 (86·4 per cent.) cases including doubtfuls ; 330 (89 per cent.) were detected culturally.

TABLE II

Comparative results of microscopical and cultural tests of 369 milk samples infected with *Str. agalactiae*

	Results obtained in present series	Results obtained by Van Rensburgh
Number infected with *Str. agalactiae* ...	369	125
Positive microscope / Positive culture	257 (69·6%)	103 (82·4%)
Doubtful microscope / Positive culture	24 (6·5%)	
Positive microscope / Negative culture	39 (10·5%)	14 (11·2%)
Negative microscope / Positive culture	49 (13·4%)	8 (6·4%)
Total numbers detected—		
Microscope ...	296 (80%)	117 (93·6%)
Culture	330 (89%)	111 (88·8%)

For purposes of comparison Van Rensburgh's figures have been included in Table II. It is interesting to note that he obtained

* As this work was being completed attention was drawn to the fact that in America practising veterinarians engaged on mastitis control programmes are utilising the microscopical examination of incubated milk samples as a simple and accurate method, compared with other methods, of effecting a diagnosis of mastitis. (Annual Review of Advances in Veterinary Medicine—*Veterinary Record*, 1943.)[3]

complete agreement in 82·4 per cent. of his 125 positive cases while microscopically he detected a further 14 (11·2 per cent.) and culturally a further 8 (6·4 per cent.). Thus he was able microscopically to detect 117 (93·6 per cent.) infected cases while the cultural technique employed detected only 111 (88·8 per cent.).

The Examination of Changed Samples

Technique.—On receipt of such samples 10 c.c. of the secretion was removed into a sterile centrifuge tube and centrifugalised at 2,500 r.p.m. for 10 minutes. A loopful of the gravity cream was cultured in T.A.G.B. From the deposit a smear preparation was made and stained by Newman's method. Some of the deposit was also surface plated on to plain blood agar. The remainder of the sample was incubated for 18 hours at 37° C., after which, if necessary, a smear was made as before. The comparative results obtained by direct smear examinations and cultural methods as employed are set out in Table III.

Table III

No. examined	Diagnosis	
	Smear	Culture
30	14 *Str. agalactiae*	19 *Str. agalactiae*
	4 Staphylococcus	4 Staphylococcus
	12 Negative	7 Negative

Results.—These results indicate that close agreement was reached between microscopical examination and the cultural methods employed. Thus of the 19 samples shown culturally to contain *Str. agalactiae*, 14 (74 per cent.) were detected on microscopical examination, while five (26 per cent.) were not so detected. There was complete agreement on the small number shown to contain staphylococci. Of the seven samples (negative to both tests) four were from cows after treatment with sulphanilamide. The three remaining samples showed marked udder disturbance as indicated cytologically, and this fact was noted in the report issued concerning them. No samples of secretion were taken from cases of 'summer mastitis' due to *Corynebacterium pyogenes* but later work suggested that microscopically such infection is detected equally as readily as staphylococcal infection. It is to be noted, however, that *C. pyogenes* frequently occurs in clumps giving a picture not unlike clumps of staphylococci with which it must not be confused. Subsequent work has also shown that further saving of time can be effected without unduly influencing the clarity of the microscopical picture produced by the following method of staining:—

1. Smear.
2. Fix by gentle heat.
3. Immerse in stain while warm and remove immediately.
4. Blot gently.
5. Dry with gentle heat.
6. Wash gently with tap water—blot to dry.

Discussion

Readers are reminded that the type of sample examined in this series was not selective and, therefore, not ideal as in the case of Van Rensburgh, who indicates, as others have done, the essential difference from a bacteriological and cytological point of view, between a sample taken from the foremilk, mid-milk and strippings, and taken hygienically or haphazardly. It is probable that had efforts been made specially to choose samples (in this sense) the results would have compared more favourably with Van Rensburgh. A positive diagnosis on smear preparation was based on finding the specific pathogen. The number of positives would have been considerably higher had it included those where a typical cytological picture was seen but in which no organisms were visible. Among a total of 60 doubtful cases in the series the doubt arose mainly in cases where a positive cytological picture was present without visible *Str. agalactiae*; 24 (40 per cent.) of these proved positive on culture. Again, in cases of heavy bacterial contamination, the bacteriological picture was so obscured in some cases as to leave no choice but to regard the sample as doubtful or negative. On the other hand, this difficulty was overcome culturally to some extent by means of the inhibitory action of the selective media used. Experience in the cultural examination of these samples has given rise to doubt regarding the wisdom of employing a too highly selective medium for routine purposes. That used in this work has been recommended as economical in labour, material and time, and, therefore, facilitating a quick result. Experience has not fully confirmed the reliance claimed for it and the view that certain growth appearances are characteristic of *Str. agalactiae* which, if present, will be evident by such a growth in 48 hours. Organisms other than *Str. agalactiae* may occasionally give "typical" growths, whereas *Str. agalactiae* may not always give typical growths. Continued incubation for 72 hours, even 96 hours, is needed in a number of cases to allow *Str. agalactiae* to grow. Had one, therefore, depended on "typical" growths and a 48-hour incubation period in T.A.G.B., the comparative figures obtained may well have been reversed.

These results support the findings of Van Rensburgh and suggest that for unchanged milk samples microscopical examination is as successful in a diagnosis of *Str. agalactiae* infection as is cultural examination in T.A.G.B. It has the additional advantage, moreover, of effecting a considerable saving in material. Apart altogether, however, from the value of this method as a means of diagnosing bacterial infection, it early became apparent that microscopical examination gives a picture of the state of the udder and of the herd in a herd test that cannot be obtained by ordinary cultural methods. The latter indicates cows harbouring *Str. agalactiae*, not essentially always an active pathogen. A microscopical examination, on the other hand, shows the grossness of infection in the quarter and suggests the length of time it has been present. Cows, moreover, may be brought under suspicion although bacteriologically free at the time of examination. Further, it has proved a useful method in the writers' hands for assessing the value of a course of treatment and of noting changes produced in the udder subsequent to infusion therapy of that organ.

One has been impressed during this work by the number of unchanged samples (9 per cent. of samples examined) which have shown a staphylococcal content of high proportion, at the same time showing evidence in some cases of *Str. agalactiae* infection. Whilst acknowledging that in many cases these staphylococci may be of no significance, in other cases where losses due to staphylococcal infection of the udder in the herd under test have been known, one has felt impelled to subject such samples to cultural examination and has frequently isolated haemolytic staphylococci. Such staphylococcal content has frequently been supported by cytological evidence of inflammatory changes in the udder. Such information again is not available using a selective medium for *Str. agalactiae*.

Van Rensburgh's finding that the examination of smears from non-incubated milks has little diagnostic value has also been confirmed. Disappointing results have also followed the examination of centrifugalised deposits of apparently normal milk. In an endeavour to find an easy method which practitioners might themselves employ, a series of samples was kept at room temperature (60 to 62° F.) for 18 hours and then smear examinations made. Here, again, results were disappointing. The work did show, however, that a clearer cytological picture is obtained from fresh milk than from milk either incubated or kept at room temperature for 18 hours, when a definite disintegration of cells takes place, so that in some cases only the outlines of the cells can be seen.

Examination of a smear preparation affords an opportunity of examining both the bacteriological and cytological content of the milk and one is able after a little practice to detect *Str. agalactiae* by its characteristic appearance. It is generally described as occurring in long chains arranged in palisade fashion in which the individual cocci are fairly large and elongated transversely. Whilst the length of the chain and even the size of the cocci may vary quite considerably the shape of the individual cell is, in the writers' experience, more or less constant, thus facilitating its identification. The cytological picture offers direct evidence as to the state of activity existing within the udder. Cassels (1943)[4] has referred to the need for a study of the cytology of the normal and infected udder and Van Rensburgh has promised a publication on the subject. In the meantime it is felt possible to make some observations which will serve as a guide to others in the examination of samples. When examining a smear from a healthy quarter during lactation the smear has been found to be free of cells or cell debris. During the drying off and dry periods and immediately following parturition, the field becomes full of cells which appear to be epithelial or mononuclear in type and stain lightly. Similar cells are sometimes seen, even in large numbers, in non-specific disturbance of the udder and sometimes may explain gross changes in the udder secretion. (It is perhaps not without significance that large numbers of these proliferating tissue cells have been found in a number of samples examined after udder infusion therapy. Such samples when examined bacteriologically have invariably revealed non-haemolytic *Str. agalactiae*. In some cases, too, where treatment has been applied in the drying off period, a continued secretion has resulted consisting of up to 80 per cent. of these mononuclear cells.)

On the other hand, the writers regard the presence of *polymorphonuclear leucocytes* at any or all stages of lactation as an indication of an inflammatory change within the organ. The number of this type of cell as seen in a field under the 1/12th oil immersion varies considerably, probably in direct ratio to the intensity of infection

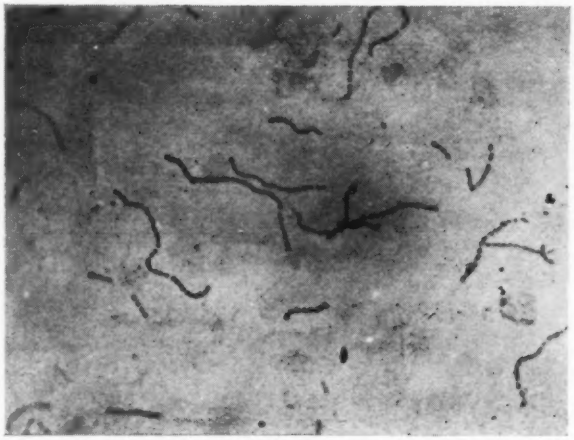

FIG. 1

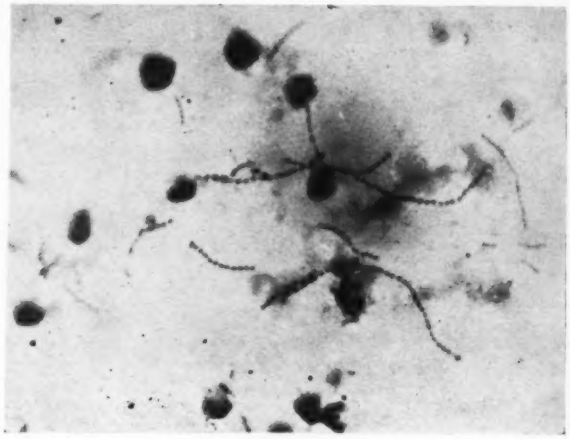

FIG. 2

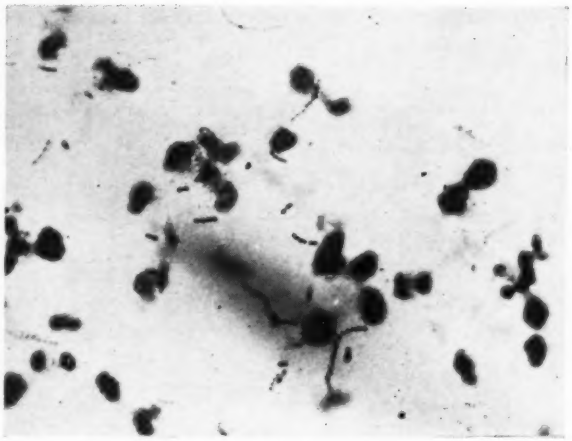

FIG. 3

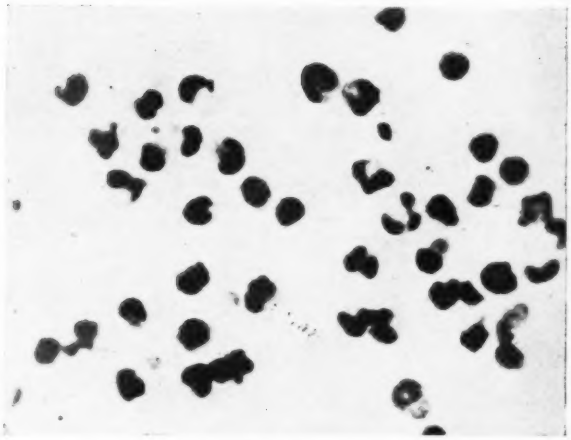

FIG. 4

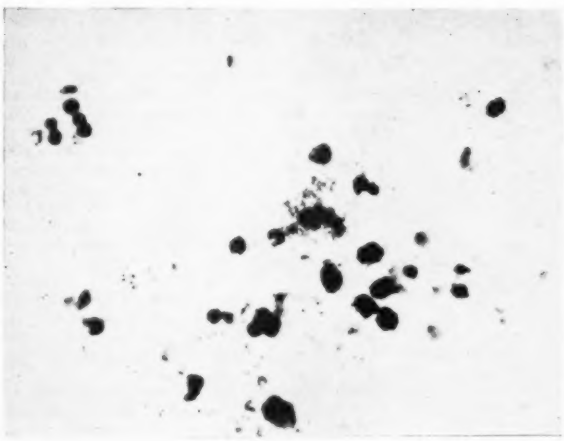

FIG. 5

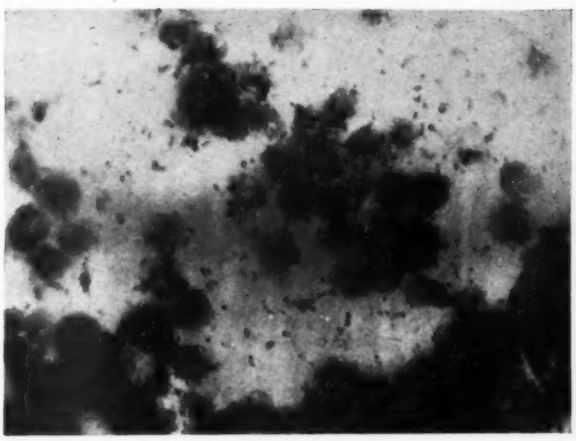

FIG. 6

and the length of time it has been present. In a herd test all gradations may be found. Some smears show streptococci with the morphological characteristics of *Str. agalactiae* and few or no polymorphs may be present. (Fig. 1.) Such samples are regarded as coming from an udder with a low grade or early infection. Others contain *Str. agalactiae* and a few polymorphs in each field (Fig. 2) while others again are full of polymorphs and *Str. agalactiae* may or may not be seen. (Figs. 3 and 4.) The latter are regarded as evidence of chronic infection with probable induration of the quarter. Apart from the theory of a bactericidal property in such milk, the writers know of no reason why some of the chronic cases fail to show *Str. agalactiae*. Nevertheless, the majority do show the presence of organisms although they may be few in number and the length of the chain is often short and this may offer an explanation as to why such samples often fail to show *Str. agalactiae* on cultural examination. Other smears show a content of mononuclear cells with or without polymorphs. These are generally from cows approaching the end of lactation, showing, through the presence or absence of streptococci, evidence or otherwise of infection. The writers would, however, emphasise the fact that the polymorph is not only seen in *Str. agalactiae* infection but is present whatever pathogenic organism is responsible for the mastitis. In other words, the polymorph reflects the inflammatory changes in the udder, the numbers reaching their peak in chronic cases.

The writers have been particularly impressed with the need for a rapid method of diagnosis in cases of acute mastitis, for, as was pointed out by Campbell (1942)[5], using the routine methods as at present generally employed many cows are dead or at least past repair before treatment is commenced if a laboratory diagnosis is awaited. It is claimed that in some cases of acute mastitis differential diagnosis of the bacterial type can be made on clinical symptoms. Practitioners have been advised also when in doubt to treat such cases as if they were due to *Str. agalactiae*. Nevertheless, it must be admitted that acute cases occur which defy differentiation on clinical grounds while it is small compensation to the clinician if a case fails to respond, having applied the recommended treatment. The present results show that approximately 75 per cent. of samples showing gross changes can be diagnosed on smear examination of the deposit obtained by centrifugalising about 10 c.c. of the secretion. In some cases centrifugalisation is unnecessary, as most of the secretion consists of tissue cells and debris, which can be utilised for a smear preparation, to be stained by the method outlined. The writers are satisfied, however, and would emphasise, that even with grossly changed samples, diagnosis is simplified by incubating the samples for 15 to 18 hours as with unchanged samples, more especially if clinicians are not examining samples with any regularity. It is of advantage, therefore, to practitioners who feel that they cannot await a laboratory diagnosis in acute cases of mastitis before commencing treatment, to make a smear preparation in this way. In the event of it proving negative a sample can always be sent to the laboratory, but if a positive diagnosis is obtained then treatment can be carried out on rational lines with confidence. It is also recommended that practitioners utilise this technique in following up the results of treatment in acute cases.

The results of this work allow of the conclusion that in the examination of apparently normal milks even though the microscopical examination of smears made from incubated samples is not allowed to supersede cultural methods, it should be made an adjunct to diagnosis in all cases. In the case of samples showing gross changes and particularly in cases of acute mastitis, there seems every advantage to be gained by practitioners in making their own microscopical examinations. For this purpose, although direct or centrifugalised material is used to save time, incubated samples can be examined with advantage.

Summary

1. In the examination of milk samples for mastitis, a comparison has been made of the results obtained between cultural methods and:—

   (*a*) The microscopical examination of smears made from unchanged samples incubated for 18 hours at 37° C.

   (*b*) The microscopical examination of smears made either directly or from the centrifugalised deposit, of non-incubated samples showing physical change (2,500 rpm. for 10 mins.).

2. Cultural examination consisted in the main of thallium acetate glucose broth, combined where necessary with plating on blood agar or crystal violet blood agar. Carbohydrate fermentation and precipitin tests were conducted in certain cases.

3. Of the 1,078 unchanged samples so examined, 369 (34·2 per cent.) were infected with *Str. agalactiae*. In 257 (69·6 per cent.) of these complete agreement was reached between the two methods of examination. An additional 39 (10·5 per cent.) cases were detected on microscopical examination and 49 (13·4 per cent.) on cultural examination alone.

4. Doubt was expressed on the microscopical examination of 24 (6·5 per cent.) which subsequent cultural examination of the incubated milk showed to be positive for *Str. agalactiae*.

5. Microscopical examination alone, therefore, detected 320 (86·4 per cent.) cases and cultural examination 330 (89 per cent.).

6. Of 30 changed samples 19 (63 per cent.) contained *Str. agalactiae*; 14 of these (74 per cent.) were detected microscopically by direct examination; four were shown microscopically to contain staphylococci, confirmed on culture. Seven were negative to both tests. Of these, four samples were taken subsequent to sulphanilamide therapy and the three remaining showed marked cytological disturbance, apparently non-specific.

7. The results are compared with those obtained by Van Rensburgh. The use of selective media in routine examination is criticised and the additional value attached to the cytological examination of smears is stressed. Attention is drawn to the presence of staphylococci either alone or in association with *Str. agalactiae* (9 per cent. of samples examined) and to their possible significance.

8. The appearance of smears is described and attention drawn to the main types of cell present and to the characteristic features of *Str. agalactiae*. The *polymorphonuclear leucocyte* is regarded as being of particular significance.

9. It is concluded that microscopical examination of smears incubated for 18 hours at 37° C. has a special place in routine laboratory diagnostic work. Likewise practitioners are advised where possible to make use of such examinations in the typing of cases of acute mastitis thus saving time and facilitating the early and rational treatment of the patient.

Acknowledgments.—The writers are indebted to Mr. A. J. Slack and Mr. R. E. Hughes, M.Sc., for assistance in the preparation of the photomicrographs. Many of the examinations during the early stages of this work were made by Mr. H. E. Harbour, B.A., M.R.C.V.S., to whom the writers' thanks are also due.

Illustrations.—Six photomicrographs of smears showing various types of infection are included. Figs. 1 to 4 illustrate stages of infection of the udder with *Str. agalactiae*. Fig. 5 shows infection with staphylococci, whilst Fig. 6 illustrates infection with *C. Pyogenes*.

Legends to Illustrations

Fig. 1.—Early stage of infection—no polymorphs but many chains of *Str. agalactiae*.

Fig. 2.—Infection established—several polymorphs and chains of organisms.

Fig. 3.—Chronic infection—many polymorphs and a tendency for the organisms to occur in shorter chains than in early infection.

Fig. 4.—Chronic infection—very many polymorphs but few, if any, organisms.

Fig. 5.—Staphylococcal mastitis—polymorphs and clumps of organisms.

Fig. 6.—Mastitis due to *C. pyogenes*. Note the tendency for the organisms to occur in clumps.

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LORD ROSEBERY ON THOROUGHBRED BREEDING

Addressing a recent meeting of the Thoroughbred Breeders' Association, of which he is President, Lord Rosebery mentioned the large requirements that will be needed abroad after the war—"which incidentally will help the Chancellor of the Exchequer to quite a considerable extent"—and said that what exactly worried him was the small and diminishing number of good stallions in the country. He gave three reasons for this: first, the lack lately of outstanding colts; secondly, the ploughing up of studs, on which point the Ministry of Agriculture had promised to give their advice; and, thirdly (the most important reason), taxation. He pointed out that Lord Derby could not receive more than £10 for a subscription to Hyperion after taxes had been paid. There was in fact little income to be derived from keeping a stallion, and a great incentive to sell it. He suggested that the Ministry of Agriculture, who paid no surtax or death duties, should formulate some scheme, such as the Ministry of Agriculture in France had before the war, whereby they kept and bought stallions for the benefit of the community. The Government "have, of course, got Big Game, but they cannot hope to breed one every year, and in any case one stallion is not enough."

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Weekly Wisdom

Theory is the general, experiments are the soldiers.—Leonardo da Vinci.

ABSTRACTS

[Scrotal and Inguinal Hernia. Sigler, T. A. (1943.) *J. Amer. vet. med. Ass.* **102**. 117-118 (2 refs.).]

The author describes his technique for the correction of scrotal hernia in the stallion.

Under intravenous chloral anaesthesia the testicle and its tunics on the hernial side are exposed in the usual way. The hernial contents are reduced, the sac is opened and the testicle removed. A gauze pack is now introduced into the inguinal canal so that one end protrudes through the internal inguinal ring into the abdominal cavity whilst the other extends down the canal to enable subsequent removal. The peritoneal sac is left open and the skin wound is sutured over the pack. The latter is removed in from 24 to 30 hours by steady traction, after which healing readily occurs.

It is claimed that this procedure is preferable to occlusion of the hernial sac by ligature or other means in that the inflammatory reaction set up by the gauze pack brings about speedy obliteration of the hernial ring and prevents any further prolapse.

C. F.

* * * * *

[The Blood Picture in Equine Influenza. Maurer, F. D., and Jones, T.C. (1943.) *Amer. J. vet. Res.* **4**. 257.]

Total erythrocyte, leucocyte and differential leucocyte counts were made daily at the United States Army Remount Depot on 37 horses which developed equine influenza after direct contact with acute and early convalescent cases in the quarantine areas. (The technique employed is described in some detail, with special attention to the method of using the modified Wright-Giesma stain.) Temperatures were taken daily from the first day of exposure. The horses all developed equine influenza a few days after being placed in contact with the existing cases, but the progress and severity of the disease varied, subject to the influence of such factors as the virulence of the virus and secondary bacteria, the extent of exposure to infection, and the weather conditions. The blood picture was found to be fairly well correlated with the clinical type of case. The red cell counts showed no significant changes. In mild uncomplicated cases, the total leucocyte count was normal or subnormal at the time of the first rise of temperature; as the temperature rose to near 104° F. for five to six days, the count rose well over 12,000 per c.mm., chiefly due to a neutrocytosis with a moderate "shift to the left." When the temperature fell, the leucocyte count and nuclear form returned to normal. The lymphocyte and monocyte counts were low during the neutrocytosis, but increased relatively and absolutely during convalescence. In complicated cases, the temperature curve was typically diphasic, and a corresponding double peak was noted in the leucocyte count, the second peak being the higher, rising to 35,000 per c.mm. if, for example, pneumonia supervened. After the second peak, the leucocyte count tended to fluctuate with the temperature, a favourable sign being the return to normal of the total count and neutrophil nuclear form. An increase of lymphocytes and monocytes usually indicated convalescence.

E. C.

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[The Economic and Nutritional Importance of Bovine Hepatic Disturbances. Frederick, L. D. (1943.) *J. Amer. vet. med. Ass.* **102**. 338-345.]

During the past few years the number of condemnations of beef and calf livers in packing plants operating under federal inspection has shown a significant increase. In view of the excellent nutritive value of liver, *e.g.*, its high content of vitamin A, vitamin B complex and iron, this represents a serious economic and nutritional loss.

It is stated that telangiectasis and what is termed "sawdust liver" have increased in incidence, whereas the number of condemnations due to liver abscess has remained constant: despite this fact, liver abscess formation from various causes remains the most serious source of loss. The paper includes notes (by H. W. Schoening and L. T. Giltner, Pathological Division, Bureau of Animal Industry) on the histopathology of some of the conditions under review. The "sawdust liver" is not responsible for any changes which have been detected *ante-mortem*, and its cause is unknown. It consists of small, greyish focal areas of liver cells in varying stages of degeneration and infiltrated with cellular elements.

A. N. W.

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[Some Clinical Aspects of Experimental Oesophagostomiasis in Cattle. Andrews, J. S., and Maldonaldo, J. F. (1943.) *Amer. J. vet. Res.* **4**. 211-225 (36 refs.).]

The symptoms following experimental infection of calves with larvae of *Oesophagostomum radiatum* were found to be identical with those observed in natural outbreaks. The smallest dose causing clinical symptoms in a calf was 20,000 larvae.

The first symptom observed was a short transient rise in temperature on the fourth or fifth day following infection and attributed to the third stage larvae having newly arrived in the intestinal mucosa. There was a further rise in temperature on about the tenth day attributed to the emergence of the larvae from the mucosa. A watery greenish diarrhoea beginning shortly after infection and sometimes lasting up to six months or so was attributed to the tissue invasion and concomitant inflammation.

A short transient polymorphonuclear leucocytosis occurred two to three weeks after the completion of infection, but there was no increase in the percentage of eosinophiles.

Anaemia was observed about two weeks after the period of infection and became progressively more pronounced for one or two months and then disappeared spontaneously upon recovery of the animal. The existence of some toxic principle acting on the haematopoietic system to prevent the formation of red cells was suspected.

Considerable loss in weight occurred in some cases due to the anorexia, diarrhoea and dehydration. As a rule there was a delay of from three to five weeks between the onset of diarrhoea and the appearance of ova in the faeces—diagnosis was thus impossible during this period.

J. S. S.

REPORT

[The Parliament of the Commonwealth of Australia: Council for Scientific and Industrial Research. Sixteenth Annual Report for the Year ended June 30th, 1942.]

The Council for Scientific and Industrial Research was established in 1926 by the reorganisation of the existing Institute of Science and Industry. The powers and functions of the Council are defined by the Science and Industry Research Act, 1920-39, and include the initiation and carrying out of research in connection with, or for the promotion of, primary and secondary industries; the training of research workers; the making of grants in aid of pure research; the testing and standardisation of scientific apparatus and instruments and the carrying out of scientific investigations connected with standardisation; and the establishment of a bureau of information relating to scientific and technical matters.

With the extension and continuation of the war and the rapid development of Australian production of munitions and associated secondary industries, the scientific resources of the Council have been called upon to an ever-increasing extent, and the older Divisions of the Council, which were developed to investigate problems of primary production, are now engaged in work of an essential and direct nature in regard to the war effort. Moreover, all the eligible staff that could be made available enlisted in the fighting services while officers of the Council with special knowledge were seconded to the Ministry of Munitions or other war-time Departments. Nevertheless, with commendable vision, faith and courage, the Council has devoted its energy and resources to the many problems presented by the agricultural and pastoral industries with a view to maintaining the progress of the Dominion during the war and after. To this end the expenditure of the Council during the financial year 1941-42 was £427,519, of which £84,092 was contributed from sources other than the Commonwealth Treasury. Among the many contributions received, reference may be made to those of the Commonwealth Bank, the Australian Wool Board, the Australian Cattle Research Association, the George Aitken Pastoral Research Trust, the Dried Fruits Control Board, the New South Wales Water Conservation and Irrigation Commission, the Cement Manufacturers' Association, the timber industry, and the pulp and paper industry—an example which might well be followed by similar organisations in this country.

Although the veterinary profession is chiefly concerned with the investigations relating to animal health and nutrition, reference must be made to the valuable research carried out in connection with pasture improvement. This included investigations designed to determine the best pasture species for the sheep country where the annual rainfall varies from 15 to 25 inches and the coastal areas of low fertility where the rainfall is somewhat higher. Studies were carried out with perennial veldt grass, a species accidentally introduced from South Africa, which has been found to flourish on the poor coastal sands. In Queensland the main studies were located at "Gilruth Plains" and included grazing trials; studies on the cutting of Mitchell grass for hay; the re-establishment of this grass from areas from which it had disappeared; soil moisture studies and changes in the chemical composition of the grass throughout the year. Other experiments were conducted in the Canberra area and had to deal with the effect of continuous grazing, rotational grazing and the different yields of grasses under varying conditions. At Canberra, also, pasture plant breeding experiments were carried out.

The analyses and testing of material and research concerning methods of drug extraction were carried out by the Department of Pharmacy, University of Sydney, and the Department of Physiology, University of Melbourne. The Department of Agriculture in the various States and the Forestry Department of Queensland also co-operated in the conduct of field experiments. The satisfactory commercial extraction of hyoscine from the native corkwood tree (*Duboisia myoporoides*) growing in Queensland was continued, and the seeds of *Atropa belladonna* and *Hyoscyamus niger* were distributed to intending growers. Supplies of *Digitalis purpurea* were locally produced and ample seed supplies obtained for distribution. Methods most suited to Australian conditions for the growing of opium poppy were tested, and morphine extraction trials carried out. Plots of *Ephedrine gerardiana, E. intermedia* and *E. nebrodensis* were established at Canberra and smaller plots in other districts. Experiments also proved that ergot, 200 lb. to the acre, can be produced provided the rye is sown at the correct time in suitable districts. Small plots of tropical plants, including quinine, strychnine, emetine and strophanthin were established and the propagation of artemisia (producing santonin) and *Dryopteris Filix-mas* was continued.

The process of transferring the activities of the Division of Economic Entomology to work of immediate importance under war conditions was continued. A new problem studied during the past year was the infestation of stored raw wool by moths, and means were devised of controlling insect pests of wool. At the request of the Army and Air Force investigations concerning certain aspects of the control of mosquitoes, house flies, blowflies and cockroaches were undertaken, and results which will help to maintain the health and comfort of the Forces achieved. Work was also continued on the problems of sheep blowfly, cattle tick and other pests affecting the country's food supplies. An investigation into the population density and breeding habits of *Lucilia cuprina* and the commercial production of efficient repellents was continued. Certain ingredients of dressings previously prescribed had to be modified and substitutes obtained. Bait-traps for *L. cuprina* were devised but the conclusion was drawn that "With present traps, the possibility of effectively reducing the population of *L. cuprina*, except with an extremely high concentration of traps, appears to be remote."

Research in Animal Health and Nutrition was carried out at the Laboratory, Melbourne, under Mr. L. B. Bull, D.V.Sc., at the F. D. McMaster Animal Health Laboratory, Sydney, under Mr. D. A. Gill, M.R.C.V.S., D.V.S.M., and at the Animal Nutrition Laboratory, Adelaide, under the Chief Nutrition Officer, Mr. H. R. Marston, F.A.C.I. Mineral Deficiency of Pasture Investigations were also undertaken at Waite Agricultural Research Institute under the Assistant Research Officer and Chemist, Mr. R. E. Shapter, A.A.C.I. Progress was maintained in most of the branches of the Division, but the general programme had to be modified to meet war-time needs. The experiment referred to in the last report in relation to *pleuro-pneumonia* vaccine has demonstrated that immunity against experimental pulmonary infection persists for at least three years. During the year 391 000 doses of the vaccine were issued for use in the cattle country. Considerable progress was made in the investigation as to how toxin production is best obtained from the causal organism of *entero-toxaemia* of sheep and considerable improvement in the antigenic value of vaccines for the prevention of the disease may now be expected. The evolution of a vaccine against *caseous lymphangitis of sheep* was commenced. Evidence continued to accumulate that top-dressing of pastures with gypsum delays the onset of *bovine haematuria*. Daily administration of small amounts of a salt of molybdenum during 2½ years did not produce signs of the disease in experimental cattle.

Mastitis in dairy cattle was studied and several bacteriostatic substances [*sic*] which were thought to have possible value in the prophylaxis of the disease were studied. *Toxaemic jaundice of sheep* and *peg-leg of cattle* were investigated. At the McMaster Animal Health Laboratory *parasitological investigations* were carried out, notably in connection with the administration of phenothiazine. Suspensions in a light mineral oil administered from automatic guns were advocated. Experiments showed that the previously recommended dose rate of 25 grammes for adult sheep could be reduced to 20 grammes in treatment of the nodule worm, but that the original dose-rate was required against the black-scour worm. During the year much attention was given to the study of the efficiency of several anthelmintics which could be used to replace those in short supply owing to the war. Mixtures of copper sulphate and sodium arsenite or arsenic pentoxide were found to be as effective against the large stomach worm and to save the use of nicotine sulphate or carbon tetrachloride. At Armidale experiments were continued on haemonchosis, trichostrongylosis and oesophagostomiasis. It was demonstrated that drenching at "epidemiological" intervals was as effective as regular monthly treatment, and that supplementary ration fed to the sheep was uneconomical and had no measurable influence on the control of worm infestation. *Contagious ophthalmia or "pink eye"* was transmitted to healthy sheep by the transfer of tears from an infected eye and *Rickettsia conjunctivae* was always found. Infection was probably transmitted by flies under natural conditions. Studies on the mineral metabolism of sheep and on hypocalcaemia and pregnancy toxaemia were continued. At the McMaster Field Station such matters as Zebu hybridisation, fertility in sheep, inheritance of skin wrinkles and "black wool," polledness and inbreeding received special attention, and at the Animal Nutrition Laboratory, Adelaide, energy metabolism, drought feeding, vitamin A status and inorganic nitrogen in drought feeding, the influence of the state of nutrition on wool production, the process of deglutition, the absorption of copper in the intestinal tract and similar matters of practical importance received careful consideration.

Space does not permit of detailed reference to the work relating to soil surveys, irrigation, forest products, fisheries investigations, metrology, aeronautics and industrial chemistry, but sections concerned with food preservation and dairy products include much that is of interest to the veterinarian and should be studied in the original which is printed and published by the Commonwealth Government Printer, Canberra, and issued at the price of 3s. 3d.—a very reasonable price in view of the vast amount of useful information the report contains. It comes at a most appropriate time when the veterinary profession in this country is endeavouring to persuade the Government and the agricultural community that veterinary science and research constitute the foundation of a progressive and prosperous pastoral industry.

L. E. W B.

ROYAL COLLEGE OF VETERINARY SURGEONS

Membership Examinations (December, 1943)

List of Successful Candidates

Dublin

First Year:

Collins, J. M.
Connor, P. J.
Donovan, D. B. (B)
Galvin, T. A.
Murphy, Michael (B)
O'Byrne, Eoin
Roe, P. F. (B)
Ryan, P. J.
Stack, Robert

(B) denotes credit in Biology.

Second Year:

Beirne, J. P.
Brown, Samuel
Byrne, P. F.
Dodd, L.
Gallagher, P. M.
Henigan, M. J. (P)
Hickey, T. F.
McCann, W. J.
McCaughey, R. M.
McKinstry, Miss E. P. B. (P)
Maybin, R. (P)
Mundy, W. A.
Murphy, John
Murphy, P. A.
O'Connor, J. M.
O'Dee, M. J.
O'Neill, J. B.
O'Riordan, John (H)
Quaid, T.
Thornton, Edward
Wiltshire, F. H. (P)

(P) denotes credit in Physiology, etc.
(H) denotes credit in Histology, etc.

Third Year:

Bourke, J. P.
Cosgrove, J. F. (P) (H)
Curtin, Sean (P)
Erskine, R. G.
Flanagan, Michael
Greenwood, J. J.
Harbison, J. T. (A) (H)
Kelly, W. H. B.
McDonald, R. C.
McFerran, A. M.
Moore, George
O'Mahony, C. P.
Ross, J. K.
Shearman, F. E.
Sweeney, P. J. A.

(P) denotes credit in Pharmacology.
(A) denotes credit in Anatomy.
(H) denotes credit in Hygiene.

Fourth Year:

Barron, J. M.
Burke, E. S.
Casey, P. M.
Clark, A. R. L.
Cooper, R. J.
Gleeson, E.
Harris, K. A.
Jolley, C. T.
Kavanagh, J. F.
Kay, E. D.
McCann, P. G.
McCullough, M. R. S.
McGrenra, D. P.
MacOnkey, W. I.
Mullin, W. J.
Murphy, Laurence (Paras)
O'Moore, L. B. S.
Sheahan, Miss M.
Wall, Brian
Yourell, Miss J.

(Paras) denotes credit in Parasitology.

Final Year:

Aitken, John	MacGowan, T. E.
Carmichael, Robt.	McNelis, N. J.
Carroll, G. A.	O'Neill, W. D.
Counihan, E. J.	O'Regan, R. J.
Cranley, J. P.	Power, J. H.
Fitzgerald, Miss P. P.	Rice, D. P.
Geaney, David	Singh, B. S.
Huey, John	Smyth, P. J.
Jackson, T. W.	Wallace, J. G.
Larkin, Patrick	

Liverpool

No First Year.

Second Year:

Davies, Ifor (H)	Whittle, W. N.
Evans, Oswyn	Williams, C. P.
Thompson, R. G.	

(H) denotes credit in Histology, etc.

Third Year:

Alun-Jones, W. S.	Obertelli, J. M.
Highet, D. R.	Robinson, F. E.
Kidd, John (H)	Smith, A. N.
Mills, Miss Susan	

(H) denotes credit in Hygiene, etc.

Fourth Year:

Adams, A. D.	Humphreys, J. R.
Appleby, Miss S. L.	Jarvis-Evans, D. G.
Doran, G. F. P.	Miller, P. G.
Duckett, A. L.	Roberts, T. O.
Edwards, Henry	Thurmand, R. C.
Hewitt, S. L. (Path)	Wynne, I. M.
Hughes, A. L.	

(Path) denotes credit in Pathology.

Final Year:

Brocklehurst, F. B.	Mutch, Allan
Cohen, C. A.	Platt, Hugh
Davison, F. L.	Roberts, H. R.
Edwards, A. M.	Walker, James

(To be continued)

MASTITIS: SALE OF PROPRIETARY VACCINES

It was reported at a meeting of the Diseases of Animals Sub-committee of the Caernarvonshire County Council that, in accordance with a resolution passed at the previous meeting, the County Councils Association had been asked to furnish their reasons for considering that the prohibition of the sale of proprietary vaccines for the treatment of bovine mastitis was impracticable. In reply the County Councils Association stated that their War Emergency Committee were of opinion that the Government could not be expected to introduce legislation dealing with any one preventive or curative agent, or even a single group amongst the many hundreds now on the market for a great variety of purposes, both human and animal. Any such legislation would have to be of a comprehensive character and entail a much larger scientific and administrative machine than was likely to be feasible, and it was very doubtful, judging from past experience, whether the scientific standardisation which would be an essential preliminary to prohibition would be a practicable policy.

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IMPORTANCE OF ANIMALS MOVEMENT RECORD

In timely fashion *The Scottish Farmer* draws attention to the need for strict observance of the requirements of the Movement of Animals (Record) Order of 1925, recent breaches of which on both sides of the Border would seem to indicate a growing laxity in this important matter. "The chief purpose of the Order, which is administered by the Ministry of Agriculture and Fisheries, is to provide an immediate check up on the movements of stock in the event of an outbreak of foot-and-mouth disease or other serious disease. In such circumstances there must be no time lag, for action, to be effective, must be swift and sure. Hence the need to know at once precisely where stock have travelled prior to an outbreak in a particular area. Unless the information is correct and immediately available it is very difficult to check the dispersal of stock, and the results may well be disastrous. On the gloomiest view it may in consequence prove impracticable to localise the outbreak, and the industry may be involved in the wholesale destruction of stock. Under war conditions in particular this simply cannot be tolerated, so it behoves all farmers in their own and the national interest to co-operate."

NOTES AND NEWS

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Good Wishes to all our Readers for Christmas and the New Year

Diary of Events

Jan. 5th, 1944.—Meeting of the Editorial Committee, N.V.M.A., at 36, Gordon Square, W.C.1, 2.30 p.m.; Advertisements Sub-committee, 2 p.m.

Jan. 5th.—R.C.V.S. Committee Meetings.

Jan. 6th.—**R.C.V.S. Council Meeting.**

Jan. 7th.—Meeting of the Sussex Division, N.V.M.A., at Brighton, 2.15 p.m.

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Veterinary Surgeons and Military Service

Joint Announcement by the Ministry of Labour and National Service and the Ministry of Agriculture and Fisheries

A joint statement was published by the above Departments on October 5th, 1943, announcing the setting up of the Army Service Veterinary Selection Committee to advise the Ministers concerned on the recruitment of veterinary surgeons for military service in their professional capacity. In order to provide full representation of the interests of veterinary surgeons in private practice an additional member representing the National Veterinary Medical Association has been appointed to the Committee.

The Committee has held three meetings and has considered the cases of veterinary surgeons who graduated since January 1st, 1940, and who at present comprise the "pool" from which the men needed for service in the R.A.V.C. will be recruited as required. Notifications of the Committee's decisions in these cases are being sent to the assistants concerned and also to their employers.

It is expected that the number of veterinary surgeons thus made available to the R.A.V.C. will go some way, at least, to meet immediate needs. It is essential, however, in order to meet urgent military contingencies, to have a reserve of veterinary surgeons who may be drawn upon when necessary.

It has accordingly been decided, on the recommendation of the Committee, that the "pool" of men formed for this purpose shall be extended forthwith to include all veterinary surgeons born on or after January 1st, 1914. The cases of these men will be carefully investigated and dealt with on their merits, in accordance with the arrangements and procedure set out in the earlier announcement.

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Southern Rhodesia Appointments.—In our advertisement columns applications are invited for posts as Government Veterinary Surgeons in the Veterinary Department of Southern Rhodesia. Intending applicants are advised to ascertain from the Office of the High Commissioner full particulars of conditions as they compare with those in this country.

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PERSONAL

Birth.—Ross.—On September 5th, 1943, at Abbottabad, N.W.F.P., India, to Ray (*née* Maclaine), wife of Major J. McL. Ross, R.A.V.C.—a son.

Sergeant Pilot John F. Birtwhistle, M.R.C.V.S., has been commissioned Pilot Officer in the R.A.F.V.R.

R.C.V.S. OBITUARY

Green, Herbert, Mill Lane, Langston, Havant, Hants. Graduated London, December 13th, 1892. Died December 9th, 1943; aged 77 years.

Livock, William Edward, The Links, Newmarket, Suffolk. Graduated N. Edinburgh, July 22nd, 1880. Died December 12th, 1943.

Player, James Fairbairn, Capt. R.A.V.C. (T.F.) (retd.). Graduated Edinburgh, April 24th, 1885. Died December 11th, 1943; aged 79 years.

Reakes, Charles John, Long Hutt, New Zealand. Graduated London, May 19th, 1892. Died October 3rd, 1943.

Capt. J. F. Player, M.R.C.V.S.

Capt. Player, after qualifying, started a riding academy, which enjoyed great popularity. He also carried on a horse dealing business. A fine horseman, he served in the Yeomanry as a young man, and won numerous cups for horsemanship. During the last war he served with the R.A.V.C. in France.

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ROYAL ARMY VETERINARY CORPS

Awards for Services in Burma and India

Following are amongst the awards in the Order of the British Empire in recognition of gallant and distinguished services in Burma and on the Eastern Frontier of India, announced on Friday of last week: Major J. S. Kingston, Major G. V. Short and Major W. L. Sinton are recipients of the M.B.E.

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Lt. C. V. G. Choudary, an Edinburgh graduate, of the Indian Army Veterinary Corps, also receives the M.B.E.

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The following announcement is made in the issue of *The London Gazette* dated December 10th, 1943: To be Lts.—Geoffrey Walter Serth (301255), November 9th, 1943; War Subs. Lt. P. H. Blampied (174803) from R.A. to be Lt., December 11th, 1943.

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ARTIFICIAL INSEMINATION OF LIVESTOCK

Supervisory Committee for Scotland

The Agricultural Improvement Council of Scotland have set up a Supervisory Committee on Artificial Insemination. The main functions of the Committee will be to advise the Council on matters relating to artificial insemination and to supervise the operation of any centres which may be established in Scotland.

The following members have been appointed to the Committee: Major R. F. Brebner (Chaiman Highland and Agricultural Society); Mr. D. Campbell, M.R.C.V.S. (Glasgow Veterinary College); Dr. H. P. Donald (Institute of Animal Genetics); Mr. A. Gofton, F.R.C.V.S. (Animal Diseases Research Association); Professor James Gray, M.C., M.A., SC.D., F.R.S. (Agricultural Research Council); Mr. F. MacGillivray (H. and A.S.); Professor W. M. Mitchell, M.C., M.B., PH.D., B.SC., M.R.C.V.S. (National Veterinary Medical Association, Scottish Branch); Mr. J. Picken (N.F.U. and Chamber); Principal Sir Arthur Olver, C.B., C.M.G., F.R.C.V.S. (Royal Dick Veterinary College); Mr. J. T. Steele, M.A., B.SC., and Mr. J. A. Symons, D.S.O., M.A., B.SC. (both of Department of Agriculture for Scotland); and Mr. W. Young (N.F.U. and Chamber). Mr. W. Ness, Department of Agriculture, will act as Secretary of the Committee.

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FOOT-AND-MOUTH DISEASE

Extension of Controlled Area

The Minister of Agriculture has made an order applying the provisions of the Foot-and-Mouth Disease (Controlled Area Restrictions) General Order of 1938 to the counties of Derby, Leicester, Nottingham and Rutland and the Kesteven division of Lincoln, and certain parts of the counties of Chester and Stafford, the West Riding of Yorkshire, and the Lindsey division of Lincoln. The order does not apply to parts of these counties declared to be an infected area.

The order aims at preventing the spread of disease to other parts of the country, and has been necessitated by the fear that infected animals have carried the disease to markets within the area. It is hoped that it will not be necessary to keep the measures in operation long.

B C G PROPHYLACTIC INOCULATION

At a meeting of the Tuberculosis Association at which, after consideration of the above subject (see *The Lancet*, December 4th, 1943, page 702), resolutions were passed calling for a committee of enquiry into the possibility of using B C G in this country as a means of prophylaxis, Professor Thos. Dalling recounted his experience with experimental inoculation of cattle at the Cambridge University institute of animal pathology. Because of local abscess formation subcutaneous inoculation had been abandoned in favour of intravenous injection. Immunity was high for the first six months after vaccination and then began to wane. It could be reinforced at six-monthly intervals, giving rise to allergy with positive tuberculin reaction, which finally fell after the series. A small field trial had been made, but the results were not yet available. A larger field trial on several thousand cattle was now being made, farms being chosen which possessed tuberculin reactors; but it was not easy to establish satisfactory control tests and the trial would take six to seven years to complete. As the vaccinated animals reached maturity they would be introduced into dairy herds. He had also made trials of a vole-bacillus vaccine (*Lancet*, 1940, ii, 338) which he thought had given better results than B C G. It was a harmless organism.

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AGRICULTURAL POLICY

At the recent meeting of the Council of the Royal Agricultural Society of England, Sir George Courthorpe, M.P., was elected President for 1944 in succession to Lord Mildmay of Flete, who has held office since 1941.

The Council decided to approach other agricultural bodies which had prepared reports on post-war policy with a view to common action in pressing the Government for the earliest possible production of its post-war agricultural policy.

* * * * *

SOME FACTORS IN THE FARMING OUTLOOK

In a recent address at Worcester, Mr. Tom Williams, M.P., Joint Parliamentary Secretary to the Ministry of Agriculture, said that the gap between the farmer and the scientist had been closed by the setting up of the Agricultural Improvement Council. A good part of the Council's work could not be expected to give immediate results, but its long-term value might be even more important than its contribution to agriculture's war-time problems. It was the Council's job to see that research work which had already produced definite results was made known to farmers and put into practice. The Council was in touch with farmers through the Technical Development Committee which was responsible for the practical demonstrations which were now so popular. For example, the demonstrations of the technique of reseeding to grass were playing a useful part. Although we had long known about temporary leys, only now was this practice of farming being widely developed. In the short space of 18 months there had been a revolution in technical development in the industry. That had been carried out by the farmers themselves, aided by their neighbours who were serving on the War Agricultural Executive Committees and their District Committees.

Mr. Williams said that we must build up the numbers of our livestock and improve its quality. In this, as in the production of crops, we must aim at the highest possible standard of efficiency. Milk remained Priority No. 1 in the agricultural programme, especially winter milk. Last winter milk yields were generally satisfactory, but we might not be so fortunate with the weather in the future. The demand for milk had increased very considerably in war-time. More was being consumed by those classes which needed it most, particularly the women and children. In the face of all difficulties this demand must be met. Winter milk was most important, and special efforts were being asked of those counties which normally produced a high yield in the summer months. Mr. Williams hoped that his audience would aim at maintaining and if possible increasing the numbers of their dairy cattle, always bearing in mind the need for the best animals.

A consistent breeding policy was necessary, and good sires of recorded ancestry should be used. This involved the production of more dairy bull calves from recorded herds. County War Agricultural Committees were taking action to improve the livestock in their areas, and a better supply of bull calves would do much to put the industry on a sound basis for years to come. He had heard it said that under war conditions it was not possible to increase milk production and at the same time improve beef cattle. He disagreed. Milk production was a job that gave no respite, but there were many farms unsuitable to milk production which could be devoted to the rearing of stock for sale both to dairy

farmers and to fatteners for beef. Too many steer calves, suitable for rearing, were being slaughtered. With the new leys there would be a growing demand for cattle to stock them.

As to the future, Mr. Williams reminded his audience that the Minister had announced that he had been authorised to begin discussion with their leaders on long-term policy. All that he would say at present was to remind them that the Hot Springs Conference had recognised that an adequate and suitable supply of food for every country could only be secured as part of a world-wide policy of industrial and agricultural expansion. The Conference had said that to obtain this result producers should receive a fair return for their products. If the country as a whole was to take action to secure that fair return for agricultural producers and was to make conditions right for a stable agriculture, then it had a right to be sure that it was doing these things for an efficient industry. Agriculture should stand on its own feet as an integral part of national life.

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At the eighth Annual General Meeting of the Ethical Pharmaceuticals Association recently held in London, Mr. G. L. Cooper was elected Chairman and Mr. C. W. S. Taylor Vice-Chairman.

The following were elected members of the Executive Committee: Messrs. J. Angus (Bengue), R. F. Edkins (Organon), A. C. Henry (Bayer), W. Beckley (Zimmerman) and H. R. Napp (Napp).

CORRESPONDENCE

Letters to the Editor should reach the Office not later than by the first post on Monday morning for insertion in following Saturday's issue.

The views expressed in letters addressed to the Editor represent the personal views of the writer only and must not be taken as expressing the opinion or having received the approval of the N.V.M.A.

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"THE PROBLEMS OF PIG CLUBS" AND OF PRACTITIONERS

Sir,—I read with interest Mr. Blair's paper and am in complete agreement with Mr. Emson's remarks on the immunisation of pigs against swine erysipelas. In the pig clubs in my locality immunisation of all pigs against swine erysipelas is compulsory. This is undoubtedly right, but when a club employs a layman to vaccinate over 300 pigs at 2s. 6d. per pig, as happened recently in my district, it gives even a G.P. food for reflection.

It is a truly Gilbertian situation to find our profession rent in two on the "one-portal system" and discussing merits or demerits of graduates from a university or veterinary school, who, on entering practice—judging by the fees under the proposed scheme for vaccination of calves against contagious abortion and the unrestricted sale of biologicals—may possess the highest academic qualifications but, one presumes, will need that lofty disdain of commercialism which will enable them to work for a mere pittance while the layman takes "all the plums."

Yours faithfully,

6, Pen Street, Boston, Lincs. R. D. Callaghan.

December 5th, 1943.

* * * * *

IDENTIFICATION OF TUBERCULIN REACTORS

Sir,—Under the present system of tuberculin testing and with the present requests by so many of the farming community to try this and thus receive the "lucrative bait," I feel that the action taken by us is not really progressive.

I suggest that all cattle which "fail" should be branded or given some other distinctive mark to carry to their death. This would stop so much of the "black market" which is prevalent to-day in reactors. It would also enable prospective purchasers to see what was going on and, further, it would enable the Ministry of Food graders to leave such cows to be graded as carcases, instead of first becoming the property of the Ministry of Food and then perhaps a dead loss when they are slaughtered.

Yours faithfully,

87, Rye Street, Bishop's Stortford. Ramsay Millar.

December 2nd, 1943.

* * * * *

BUCCAL WARTS IN DOGS

Sir,—Instead of using bismuth salicylate subcutaneously, I treat this condition with sodium salicylate, grains 10, t.i.d., with great success by mouth. I suppose all who as students passed through the hands of Mr. George Dykes, of Glasgow, will do so too.

I have attributed the effect to the keratolytic action of the salicylates, for apparently these are particularly active in the head region. I cannot find that salicylates are deposited in the buccal mucosum or are excreted in the saliva, but perhaps one of these things does happen.

Is it possible that the beneficial effect of bismuth salicylate is in reality due to its being converted into sodium salicylate in the bloodstream?

Yours faithfully,

Bottoms House, James Marshall.
Savile Road, Dewsbury, Yorks.

December 8th, 1943.

* * * * *

VETERINARY SURGEONS ACTS (AMENDMENT) BILL

Sir,—The Council of the R.C.V.S. has incurred much adverse criticism and unpopularity in preparing a proposed new Bill, but it appears to be forgotten that it has clearly intimated to all on its Register to whom a *draft* has been sent, that unless the majority approve, it will be discarded. I submit that no Council could behave in a more democratic manner.

As a basis for future discussion, does the profession agree:—

1. That the establishment of dispensaries for free treatment of the animals of the poor in poor districts is desirable?

2. That the profession itself cannot afford to establish such dispensaries, but must depend on the animal welfare societies for their establishment?

If so, then it is obvious that some agreement has got to be reached with the animal welfare societies.

In his communication to these columns, Mr. N. R. Turnbull proves that he has a clearer conception of the matter than some of his predecessors. If we as a profession are of the opinion that a new Bill is necessary to *control* unqualified practice, for its *total eradication* is quite impossible for all that comes under that definition, we have got to appreciate to the full points 4 and 5 made by this correspondent.

The former might be solved by insisting on production of income tax returns over a defined period before application, to show that it has been the sole source of livelihood. The latter is plain common sense. It is not so very long ago that practitioners advertised for, employed, and trained unqualified assistants. If a Bill was determined upon, and we were generous to these, I believe that they would be our most loyal supporters in preventing a recrudescence of unqualified practice to the extent which exists to-day, and which is causing untold harm, to say nothing of the difficulty of effective control. I do not consider it necessary to give any title to those who might be registered.

Yours faithfully,

"Rothiemurchus," J. F. D. Tutt.
St. Cross, Winchester.

December 3rd, 1943.

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PROFESSIONAL FREEDOM

Sir,—I should like to bring to the notice of members this excerpt from *The Journal of the American Veterinary Medical Association* for November, 1943:—

"In telling the American people what the veterinary profession can do, one should not forget to add that the perturbation of Britain in regard to animal health is based upon three years of trying, in vain, to regiment its veterinary service. In other words, while the enemy nations with regimented personnel and industries, kill, imprison and enslave millions, the defenders are arguing about the freedom they feel slipping out of their grasp."

This opinion of our Allies must give us all food for thought.

Yours faithfully,

35 Upper Garth Road, Bangor. H. Williams Smith.

December 11th, 1943.

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GLASGOW VETERINARY COLLEGE

Sir,—It was with great pleasure that I read the letter by R. A. Brown in the issue of December 11th, 1943, on the subject of the Glasgow College. May I, as a final year student of that College, be allowed to endorse his statements.

The status of the profession is a cause of much controversy these days and the proposed amalgamation with the university will do little to raise it. If such a calamity should occur the veterinary students then will be subordinated to the Medical Faculty which definitely "rules the roost" in Glasgow.

Is this the way to make the public aware of our existence? It is a lamentable fact that 90 per cent. of the people resident in Glasgow are completely unaware of the existence in their midst of a veterinary college.

The rational and, to me, the only solution lies in the building of a new and imposing college in Glasgow. Then would the people of Glasgow say, "That is the veterinary college. The future veterinary surgeons of our land spend five long and hard years there to fit them to take care of our animals."

Then and only then, will the veterinary profession enjoy the status it deserves.

Yours faithfully,

Final Year Student, Thomas C. Denholm.
Glasgow Veterinary College,
83, Buccleuch Street, Glasgow.

BD. PER. GEN.